

Claims

- [c1] 1. A coaxial connector for use with a coaxial cable having an inner conductor, an outer conductor and a sheath, comprising:
- a rear clamp nut having a bore with a first inner diameter at a cable end and a smaller second inner diameter at a connector end; the first inner diameter dimensioned to accept the cable with the sheath and the second inner diameter dimensioned to accept the cable without the sheath;
- a helical step between the first inner diameter and the second inner diameter extends around the bore between the cable end and the connector end of a slot with a cutting edge; the cutting edge at the second inner diameter operating to cut and separate the sheath from the outer conductor as the cable is inserted into the bore and one of the connector and the cable rotated; and
- a connector body adapted to connect to the rear clamp nut at the connector end.
- [c2] 2. The connector of claim 1, wherein the connector body and the rear clamp nut are connected via threads.
- [c3] 3. The connector of claim 2, wherein the threads are a

plurality of interleaved concentric threads.

- [c4] 4. The connector of claim 3, wherein there are one of two, three and four interleaved concentric threads.
- [c5] 5. The connector of claim 1, further including an over-tightening protection assembly between the rear clamp nut and an inner coupling sleeve;
the connector body connected to the rear clamp nut at the connector end via threads on the inner coupling sleeve.
- [c6] 6. The connector of claim 5, wherein the over-tightening assembly has a first interlock surface and a second interlock surface;
the first interlock surface and the second interlock surface each having a plurality of complementary protrusions;
the first interlock surface coupled to the connector body and the second interlock surface coupled to the inner coupling sleeve;
the complementary protrusions of the first interlock surface and the second interlock surface interact whereby the connector body is coupled to the inner coupling sleeve during rotation of the connector body via application of a torque below a threshold level;
at least one of the complementary protrusions deflecting

upon application of the torque at or above the threshold level to decouple the connector body from the inner coupling sleeve.

- [c7] 7. The connector of claim 6, wherein the first interlock surface is a finger ring coupled to the connector body via an internally projecting first ring tab in a groove of the rear clamp nut which keys with a corresponding first ring slot in the finger ring.
- [c8] 8. The connector of claim 6, wherein the the second interlock surface is a ramp ring coupled to the inner collar via an inward projecting second ring tab which keys with a corresponding inner coupling sleeve slot of the inner coupling sleeve.
- [c9] 9. The connector of claim 6, wherein the plurality of complementary protrusions on the first interlock surface is a plurality of fingers projecting inwards.
- [c10] 10. The connector of claim 6, wherein the plurality of complementary protrusions on the second interlock surface is a plurality of ramps projecting outwards.
- [c11] 11. The connector of claim 6, wherein the plurality of complementary protrusions on the second interlock surface are formed in an exterior surface of the inner coupling sleeve.

[c12] 12. A coaxial connector for coupling a coaxial cable with a connection, comprising:
a connector body and an interface coupled to the connector body;
a coupling nut coaxial with the interface and an inner coupling sleeve; the inner coupling sleeve having threads for coupling the interface with the connection; and
an inner first interlock surface coupled to the coupling nut and an outward second interlock surface coupled to the inner coupling sleeve;
the first interlock surface and the second interlock surface each having a plurality of complementary protrusions;
the complementary protrusions of the first interlock surface and the second interlock surface interact whereby the coupling nut is coupled to the inner coupling sleeve during rotation of the coupling nut via application of a torque below a threshold level;
at least one of the complementary protrusions deflecting upon application of the torque at or above the threshold level to decouple the connector body from the inner coupling sleeve.

[c13] 13. The connector of claim 12, wherein the first interlock surface is a finger ring coupled to the coupling nut and the complementary protrusions of the first interlock sur-

face are a plurality of fingers extending inward from the finger ring.

[c14] 14. The connector of claim 12, wherein the second interlock surface is a ramp ring coupled to the inner coupling sleeve and the complementary protrusions of the second interlocking surface is a plurality of ramps projecting outward from the ramp ring.

[c15] 15. The connector of claim 12, wherein the second interlock surface is a plurality of ramps formed in an outer surface of the inner coupling sleeve.

[c16] 16. The connector of claim 12, further including a rear clamp nut having a rear clamp nut bore with a first inner diameter at a cable end and a smaller second inner diameter at a connector end; the first inner diameter dimensioned to fit onto a coaxial cable with a sheath and the second inner diameter dimensioned to fit onto the cable without the sheath;
a helical step between the first inner diameter and the second inner diameter extends around the bore between the cable end and the connector end of a slot with a cutting edge; the cutting edge at the second inner diameter operating to cut and separate the sheath from the outer conductor as the cable is inserted into the bore and rotated; and

the connector body adapted to connect to the rear clamp nut at the connector end.

[c17] 17. The connector of claim 16, wherein the connector body and the rear clamp nut are connected via a plurality of interleaved concentric threads.

[c18] 18. The connector of claim 17, wherein there are one of two, three and four interleaved concentric threads.

[c19] 19. A coaxial connector, comprising:
a connector body connected to a rear clamp nut;
The connector of claim 1, wherein the connector body and the rear clamp nut are connected via a plurality of interleaved concentric threads.

[c20] 20. The connector of claim 19, wherein there are one of two, three and four interleaved concentric threads.

[c21] 21. The connector of claim 19, wherein the rear clamp nut has a rear clamp nut bore with a first inner diameter at a cable end and a smaller second inner diameter at a connector end; the first inner diameter dimensioned to fit onto a coaxial cable with the sheath and the second inner diameter dimensioned to fit onto the coaxial cable without the sheath;
a helical step between the first inner diameter and the second inner diameter extends around the bore between

the cable end and the connector end of a slot with a cutting edge; the cutting edge at the second inner diameter operating to cut and separate the sheath from the outer conductor as the cable is inserted into the rear clamp nut bore and rotated.

[c22] 22. The connector of claim 19, wherein the connector body is connected to the rear clamp nut via an inner coupling sleeve which is linked to the rear clamp nut via an over-tightening protection assembly.

[c23] 23. The connector of claim 22, wherein the over-tightening assembly has a an inner first interlock surface coupled to the rear clamp nut and an outward second interlock surface coupled to the inner coupling sleeve; the first interlock surface and the second interlock surface each having a plurality of complementary protrusions; the complementary protrusions of the first interlock surface and the second interlock surface interact whereby the rear clamp nut is coupled to the inner coupling sleeve during rotation of the rear clamp nut via application of a torque below a threshold level; at least one of the complementary protrusions deflecting upon application of the torque at or above the threshold level to decouple the rear clamp nut from the inner coupling sleeve.

- [c24] 24. The connector of claim 23, wherein the first interlock surface is a finger ring with a plurality of inward projecting fingers and the second interlock surface is a ramp ring with a plurality of outward projecting ramps.
- [c25] 25. The connector of claim 23, wherein the second interlock surface is a plurality of ramps formed around an outer surface of the inner coupling sleeve.
- [c26] 26. A torque limiting coupling nut assembly, comprising:
a coupling nut having a groove at a cable end;
a cylindrical inner coupling sleeve adapted to seat within the coupling nut; the inner coupling sleeve having inward facing connector threads around an inner diameter;
a first interlock surface coupled to the groove and a second interlock surface coupled to the inner coupling sleeve;
the first interlock surface and the second interlock surface each having a plurality of complementary protrusions;
the complementary protrusions of the first interlock surface and the second interlock surface interact whereby the rear clamp nut is coupled to the inner coupling sleeve during rotation of the rear clamp nut via application of a torque below a threshold level;
at least one of the complementary protrusions deflecting

upon application of the torque at or above the threshold level to decouple the rear clamp nut from the inner coupling sleeve.

[c27] 27. The assembly of claim 26, wherein the coupling nut has an inward facing coupling nut retention groove into which an outwardly projecting lip edge of the inner coupling sleeve is received whereby the inner coupling sleeve is rotatably retained within the coupling nut.

[c28] 28. The assembly of claim 27, wherein the lip edge is formed by a plurality of tines, the lip edge formed projecting outward from the plurality of tines.

[c29] 29. The assembly of claim 26, wherein the second interlock surface is formed in an outer diameter of the inner coupling sleeve as a plurality of ramps.

[c30] 30. The assembly of claim 26, further including an inner coupling sleeve flange which extends inward at the connector end to a diameter smaller than the inner diameter.